



EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD); AN EXPLORATION INTO ITS EXISTING REALITIES, WITH EFFICACY TESTING OF A MODEL ESD MODULE

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ABSTRACT

Education for sustainable development is a dynamic perspective that includes a new approach to education that encourages people of all ages to shoulder responsibility for forming and enjoying a sustainable future. There is increasing international appreciation of Education for Sustainable Development (ESD) as an important part of quality education and a key enabler for sustainable development. This paper has attempted to understand the sustainability consciousness of high school students from a government school in the district of Shimla, Himachal Pradesh, along with testing the efficacy of an experimental ESD module prepared by the researchers.

This pre-experimental research study was conducted with a sample size of 60 students aged between 14 to 17 from 10th grade, and is based on primary, pre and post intervention data collected using a Sustainability Consciousness Questionnaire designed by Niklas M. Gericke, Jelle Boeve-de Pauw, Teresa Berglund, and Daniel Olsson, as part of the project, "Evaluating effects and success factors related to ESD implementation in Swedish schools". For the purpose of analyzing the data, and testing the hypotheses, both descriptive and inferential statistical methods were used. Paired Samples T-Test, Independent Samples T-Test, One-way Anova, was facilitated to understand the difference in awareness level of students on sustainable development, based on various variables.

After data collection and data analysis done according to the requirements of a quantitative study, the findings portray, that there was a statistically significant difference, between the before and after scores on the awareness level of students on sustainable development. The results from the pre-intervention ($M=163.65$, $SD=21.49$) and post-intervention ($M=186.25$, $SD=23.49$), $p=0.000$ indicate, that designed ESD module by the researchers, has been empirically proven to be effective.

This was due to the implementation of the experimental ESD module. Despite the sustainability consciousness being low as per what is required for a sustainable community, the implementation of ESD with the help of a specially designed, culturally appropriate module, can in fact contribute to significant change in the awareness level and attitudinal change in the minds of the generation of tomorrow.

INTRODUCTION

In the contemporary lived scenario, it is fundamentally agreed upon, that living sustainably is the only practical way to move forward, not just for the wellbeing of a thriving, healthy planet, and population of today, but for a better tomorrow. This monumental task has been defined in the concept of sustainable development. As the overarching paradigm of the United Nations (UN), sustainable development pursues a balanced development of environmental, social, and economic goals to improve the quality of life for the future generation. Sustainable development is nothing but an organizing principle which provides much attention to the ability of the natural systems to provide resources and services for meeting human developmental needs, all the while sustaining factors on which the economy and society in general depend. The ultimate result is a harmonic society where human needs as well as the integrity and stability of the natural system go hand in hand in an uncompromising manner.

During the last few decades, the world communities have agreed upon addressing sustainable development through international treaties. Very conventionally and practically speaking, "Sustainable development is development that meets the needs of the present, without compromising the ability of future generations to meet their own needs".

Embarking on the path of sustainable development will most definitely require a profound transformation of how we think and act. In order to create a more sustainable world, and in order to engage with issues related to sustainability, as described in the sustainable development goals, it is of paramount importance, that individuals must become sustainability change makers.

Our planet is facing urgent and dramatic challenges because of which, UNESCO came up with an education sector response called, Education for Sustainable Development. Education for Sustainable Development essentially means inculcating key sustainable development issues into teaching and learning; for example, climate change, disaster risk reduction, biodiversity, poverty reduction and sustainable consumption.

ESD incorporates matters that are truly relevant and necessary to every learner in the light of today's challenges. Not only is it holistic, but also reformatory, that addresses learning contents and outcomes, pedagogy and learning environment. Thus, ESD does not only include key concerns and challenges into its ambit, but is also centered on making the learning process more interactive, action-oriented, and learner centered. Therefore, ESD requires a shift from teaching to learning, indeed a herculean task which requires transforming pedagogy "which supports self-directed learning, participation and collaboration, problem-orientation, inter- and trans disciplinary and the linking of formal and informal learning".

However, when we consider the Indian scenario, schools are not equipped with a pedagogy for sustainability education and there is a dire need for a shift towards active, participative, and experiential learning methods that engage the learner and make a real difference to their understanding, thinking and ability to act.

Therefore, there has been an attempt by the researchers to traverse through the level of awareness on sustainable development among high school children and to implement and analyse the potency of an experimental ESD module. This is an intervention research so as to generate high quality evidence on the effects of this social work intervention.

There was an effort to collect pre and post intervention data through questionnaire method, from the children, in order to analyze the change in awareness level as well as attitudinal shift in them, as a cause of receiving the intervention.

The ultimate goal was to engage the students in participatory teaching and learning methods that motivate and empower them to change their behavior and take action for sustainable development, all the while promoting competencies like critical thinking, imagining future scenarios, and making decisions in a collaborative manner.

This paper has tried to analyze the awareness level of high school students aged between 14 to 17, regarding concepts pertaining to sustainability, sustainable development goals, and their general attitude towards it. Further, an analysis has been done based on a comparative study between pre and post intervention data, to test the effectiveness and impact of an experimental ESD module on these students.

There has not been a wide array of literature based on a comparative study of the level of awareness of Indian high school students regarding Sustainable development, before and after receiving an innovative awareness session. Therefore, this study has attempted to fill that gap.

General objective

To traverse through the sustainability conscience among school children and to introduce and test the potency of an experimental ESD module.

Specific objectives

1. To assess the current level of sustainability conscience among school children.
2. To find out the influencing factors associated with the existing level of awareness about sustainable development among school children.
3. To implement and analyze the response and effectiveness of an experimental ESD module on sustainable development among school children.

Hypotheses

Hypothesis 1

H1: There exists significant difference in awareness level on sustainable development of school students before and after receiving intervention through a model ESD module.

H0: There exists no significant difference in awareness level on sustainable development of school students before and after receiving intervention through a model ESD module.

Literature Review

"A decade into the twenty-first century, the world faces substantial, complex, and interlinked development and lifestyle challenges and problems. The challenges arise from values that have created unsustainable societies... We need a shared commitment to education that empowers people for change. Such education should be of a quality that provides the values, knowledge, skills and competencies for sustainable living and participation in society."

The realization of the pressing need to save the planet from imprudent exploitation of the depleting natural resources has impressed upon the collective consciousness of the countries of the world and brought into focus an intensifying thrust on sustainable development. Sustainable development encompasses a wide spectrum of issues that affects every aspect of human life and its implications for the environment. To address these issues there is a strong need for human ingenuity and imagination, efficient decision making, and planning and management skills. Education has the potential of providing the necessary knowledge, skills, and discretion, and instills cultural, behavioral, and ideological transformation that brings the desired sensitivity towards the tenets of sustainable development. The literature on sustainable development is replete with studies that examine various facets of the role of education for sustainable development. The purpose of this chapter, is to bring together various studies on the role of education in sustainable development and to identify important elements, dimensions, and challenges of education for sustainable development.

Nevertheless, according to a recent report, public awareness of the SDGs and the 2030 Agenda seems to be modest especially at the community levels in spite of a number of actions undertaken at entire levels. Except for that, one of the key messages of the SDG Summit 2019 is that governments cannot do it on their own and they are reaching out to build new collaborations with civil society, scientific community etc. The awareness of the citizens functions as a prerequisite to formulate policy preferences and apply pressure on policymakers.

A holistic approach to decision-making is required for a community to be sustainable. In particular the interconnected nature of social, economic, and environmental issues needs to be recognized and acted upon. In a globalized world, individual actions have implications well beyond their immediate surroundings and issues such as climate change, water shortages and biodiversity loss can no longer be seen in isolation from each other or the wider context in which they occur. Global efforts to engage with threats to economic stability, environmental damage and a growing number of social issues present clear signs that current global trends are unsustainable. Action is needed now to create a sustainable future, protect our way of life, and preserve the integrity of earth's biodiversity and ecosystems.

But merely talking about this would very unlikely contribute to any significant change. What we are facing as a condition, is a global crisis, and "education represents the most efficient way of forming a social and intellectual basis for the implementation of sustainable development principles and coevolution ideas". Irina Bokova, Director-General of UNESCO says, "A fundamental change is needed in the way we think about education's role in global development, because it has a catalytic impact on the well-being of individuals and the future of our planet. Now, more than ever, education has a responsibility to be in gear with 21st century challenges and aspirations, and foster the right types of values and skills that will lead to sustainable and inclusive growth, and peaceful living together. Education can, and must, contribute to a new vision of sustainable global development".

It goes without saying, that people require the knowledge, skills, values, and attitudes that empower them to contribute to sustainable development. Therefore, to be able to achieve this, education is crucial. Education for sustainability aims to tackle the underlying causes of unsustainable trends. The focus is on systemic change.

The role of education (with SDGs enlightenment as its central focus) is central to achieving the SDGs. Just as Health Education is central to Primary Health Care, the United Nations' Educational and Scientific and Cultural Organization (UNESCO) recognizes that education is a major key to sustainable development with its statement "Sustainable development cannot be achieved by technological solutions, political regulation, or financial instruments alone. We need to change the way we think and act. This requires quality education and learning for sustainable development at all levels and in all social contexts."

Having said that, not all kinds of education can and will support sustainable development. For example, education that promotes economic growth alone may well also lead to an increase in unsustainable consumption patterns. "The

now well-established approach of Education for Sustainable Development (ESD), empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society for present and future generations". Transformation in all contexts via teaching and learning is possible when content related to sustainability is inculcated in the curriculum. Through the inclusion of sustainability related concepts in academic pedagogies, we might be able to develop competencies that empower individuals to reflect on their own actions, taking into account their current and future social, cultural, economic, and environmental impacts, from a local and global perspective. ESD has to be understood as an integral part of quality education, with the simultaneous empowerment of individuals to act in a sustainable manner in complex situations, participate in socio-political processes, and engaging in activities which contribute inadvertently towards the ultimate 17 sustainable development goals, proposed by the United Nations. According to the United Nations Educational, Scientific, and Cultural Organisation, "All educational institutions – from pre-school to tertiary education and in non-formal and informal education – can and should consider it their responsibility to deal intensively with matters of sustainable development and to foster the development of sustainability competencies." Due to mounting problems related to sustainable development the need of education for sustainable development continues growing. ESD is regarded as a way of forming of new consciousness and behavior through which human development course should be adjusted.

The United Nations promotes ESD as a global educational goal. The United Nations definition is perhaps the most highly regarded authoritative definition of ESD:

"Education for Sustainable Development (ESD) empowers people to change the way they think and work towards a sustainable future."

Other definitions of Education for Sustainable Development, includes "education with a transformative agenda – it is about creating change towards more sustainable ways of living." To put it in other words, ESD is focused on "the development of environmental consciousness and formation of ecological culture."

UNESCO's education sector response called, "Education for Sustainable Development, has been internationally recognized as a key enabler for sustainable development. It has been acknowledged at the three seminal global sustainable development summits: the 1992 UN Conference on Environment and Development (UNCED) in Rio de Janeiro; the 2002 World Summit on Sustainable Development (WSSD) in Johannesburg, South Africa; and the 2012 UN Conference on Sustainable Development (UNCSD), also in Rio de Janeiro, Brazil. ESD is also recognized in other key global agreements, such as the Paris Agreement.

We need to acknowledge, however, that there might be significant differences at the 'grass root' level of practice of ESD – both as far as goals and orientation, as well as level of educational programmes within ESD is concerned. Also, not everything that may be characterized as 'sustainable development' in the curriculum is taught as part of a specific course – for example, at the level of middle school, children could be taught about issues such as poverty and agriculture within regular history or society courses.

Education for Sustainability is still in its infancy. Whilst it is demonstrably successful in particular projects and sectors, its application needs a more strategic and coordinated framework, guiding the use of education and learning, to embed systemic change within the community, institutions, government, and industry. Approaches need to encompass consideration of the environment, society, and the economy rather than focus on the environment alone. A large effort needs to be applied to develop the capacity of educators and change agents to adopt approaches that stimulate learning and debate in society, and develop trust and skills to work collaboratively.

The United Nations had declared the decade from 2005 to 2014, the Decade of Education for Sustainable Development. The founding value of Education for Sustainable Development (ESD) is respect: respect for others, both present and future generations; and respect for the planet and what it provides to us (e.g., resources, fauna, and flora). ESD challenges us all to adopt new behaviors and practices to secure our future. Education has been recognized internationally as fundamentally important to addressing the critical global challenges we all face. The environmental, social, cultural, and economic implications through education alone are enormous and touch many aspects of life of the world's population. An educational effort will encourage changes in behavior that will create a more sustainable future in terms of environmental integrity, economic viability, and a just society for present and future generations. Through education and lifelong learning, we can achieve lifestyles based on economic and social justice, food security, ecological integrity, sustainable livelihoods, respect for all life forms, and strong values that foster social cohesion, democracy, and collective action.

Creating a sustainable community requires that individuals and organizations have the knowledge, skills, values, capacity, and motivation to respond to the complex sustainability issues they encounter in their personal and working lives. "We must reconsider our tools, methods and approaches, our politics and economics, our relationships and partnerships, and the very foundations and purpose of education and how it relates to the lives we lead ... ESD encourages a shift

from viewing education as a delivery mechanism to a lifelong, holistic and inclusive process.”.

A learning-for-sustainability approach moves away from being constrained by 'doom and gloom' scenarios towards futures-oriented thinking that motivates for action. It advocates questioning and reflection on our actions and decisions, in order to re-think and re-design our activities. To help individuals achieve environmental and quality-of-life outcomes, and contribute as responsible global citizens, it is important that we incorporate learning-based approaches to change within environmental and sustainability initiatives. We also need to mainstream sustainability approaches within education, training, and capacity building activities. Education for Sustainability goes beyond providing information about the environment. It is seen as a process which motivates and engages people in creating sustainable futures. It is not only a process which builds competence but also a change strategy which will assist people and organizations to move towards sustainability.

To say the least, climate change and sustainability are issues of global significance. While various developmental sectors have implemented for sustainability in their developmental agendas for many years, the education sector has been slow to take up this challenge. This poses the question: Why has this sector been so slow to engage with sustainability? Elliot and Davis, in their paper, after a long engagement in seeking to bring early childhood education and education for sustainability together, explain how, the early childhood sector has failed to engage in education for sustainability and are left far behind the imperative to 'get active' for a sustainable future.

Education systems must respond to this pressing need by defining relevant learning objectives and learning contents, introducing pedagogies that empower learners, and urging their institutions to include sustainability principles in their management structures. The new 2030 Agenda for Sustainable Development clearly reflects this vision of the importance of an appropriate educational response. Education is explicitly formulated as a stand-alone goal – Sustainable Development Goal 4. Numerous education related targets and indicators are also contained within other Sustainable Development Goals (SDGs). Education is both a goal in itself and a means for attaining all the other SDGs. It is not only an integral part of sustainable development, but also a key enabler for it. That is why education represents an essential strategy in the pursuit of the SDGs. However, empirical studies are a missing link in the discourse around ESD, where decisions and implementation strategies are heavily based on policy recommendations and gut feelings by practitioners.

Many educations for sustainable development (ESD) programs are designed to change attitudes and values toward the natural environment. However, psychological research indicates that several factors in addition to attitude influence behavior, including contextual support, social norms, action difficulty, and habitual behavior. Thus, if attitude change is to translate into altered behavior, education must extend beyond attitudes to assist people to act in ways consistent with their values.

It is the responsibility and duty of education institutes, schools, teachers, and instructors to guide students to become world citizens and contribute to global sustainable development. However, most of the studies on SDG awareness have been aimed at adults or college students, while limited open literature to date has explored the understanding and awareness of the SDGs among high school students, especially Indian students. Apart from that, recent studies have shown that most of the activities that aim to achieve the SDGs are carried out in universities, while senior high school students lack an awareness of sustainable development. Therefore, educational institutes and educators need to guide students to monitor global issues and foster their sustainability consciousness. Education for Sustainable Development (ESD) aims to enlighten people's consciousness on sustainable development through future education, including natural resources protection, sustainable consumption, global citizenship education, gender equality, etc.; thus, it aims to make a substantial contribution to the achievement of the SDGs. As a member of the UN, India should and is willing to actively respond to the SDGs, fulfil common responsibilities and specific responsibilities based on national conditions. The awareness of the SDGs among Indian high school students should be also further learned and enhanced.

A very important aspect of making development sustainable in nature is to ensure quality of education, the foundation of which lies in primary and secondary education. Given the tall order that education for sustainable development calls for, there is a pressing need to set the education system of India in place. Unfortunately, it is also a sector in which policy approach is rather tentative, ad-hoc and short-sighted in nature as is evident in the decisions taken by governments over the years. When the current state of education in the terms of the quality of education imparted, the quality of learners and that of educators is juxtaposed with the lofty requirements of imbibing sensitivity towards sustainable development, a lot remains wanting.

An approach towards education that is focused only on conjuring up the required statistics is destined to achieve little. The lack of vision among policymakers and their failure to perceive the influence of quality education in building a cohesive society characterized by harmony, empathy and scientific temperament is mani-

fest in the subjugation of the role of educators, particularly, at primary and secondary levels. Extensive and intensive house-cleaning of the education system is required if the government is serious about the contribution of education in taking the country to high and sustainable levels of whole-some development.

Theoretical Background

2.1. Sustainable Development Goals: The Blueprint to Achieve a More Sustainable Future for Both Humanity and the Planet

The world has been involved in sustainable development for decades, even before sustainable development was officially defined. An increasing consensus is being reached that sustainability is a global issue and thus needs a global response; therefore, all ethnicities, groups and countries are obligated to face this challenge and make changes. Established in 2000, the MDGs mapped out 8 goals and 21 targets with the central objective to “eradicate extreme hunger and poverty” by the end of 2015. The world has progressed in poverty eradication, universal education, health care and other fields after decades of international cooperation. In order to transfer the momentum of the MDGs and complete the remaining tasks with more focus on the collaborative, comprehensive and sustainable development of the economy, society and environment, a new global plan to navigate humanity toward a more sustainable path was developed during the UN Conference on Sustainable Development (Rio + 20) in Rio de Janeiro, Brazil, in June 2012. As part of a three-year effort involving UN Members, encompassing millions of people from all over the world, at the United Nations General Assembly in September 2015 the leaders of 193 countries unanimously adopted the 2030 Agenda for Sustainable Development and proposed establishing the SDGs. The universal, transformational, and inclusive SDGs describe the major development challenges for humanity and express the overall objectives and directions in a certain area. Targets are relatively specific items to be achieved under a given goal. The goals and targets will stimulate action over the 15 years following their development in 2016 in areas of critical importance for humanity and the planet.

The aim of the SDGs is to secure a sustainable, peaceful, prosperous, and equitable life on Earth for this and future generations. All countries subscribing to the 2030 Agenda, as well as their populations and organizations, need to recognize their responsibilities and take urgent action to achieve sustainable development. In order to realize the SDGs, it is necessary to enhance students' awareness of sustainable development and the SDGs. Integrating ESD into the curricula and textbooks in upper secondary education is one approach to realizing the SDGs, as it can ensure that young people learn not only basic skills but also transferable competencies, such as critical thinking, problem solving, advocacy and conflict resolution that will support them in becoming responsible global citizens.

2.2. Education for Sustainable Development: A Fundamental and Key Approach to Achieve the SDGs

According to the report published by the UN, the past decade has witnessed a significant increase in school enrolment and in educational opportunities at all levels, especially for girls. Nevertheless, about 260 million children were still not in school in 2018, accounting for nearly one-fifth of the global school-age population. More than half of children and adolescents worldwide do not meet the minimum literacy and numeracy requirements. Primary education enrolment in developing countries has reached 91%, but 57 million children remain deprived of education. The United Nations Educational, Scientific and Cultural Organization (UNESCO), as the UN specialized agency for education, asserts that education is a human right for all throughout life and is the foundation on which to drive sustainable development. Quality education can improve social and economic status, but it is also the key to eliminating poverty. Therefore, education helps to reduce inequality and achieve gender equality. In addition, education enables people everywhere to live healthier and more sustainable lives. Education is also vital to promote tolerance among people and contributes to a more peaceful society. “Education can, and must, contribute to a new vision of sustainable global development.” UNESCO clearly recognized the significance of education in sustainable development in 2015. In addition to SDG 4, several other SDGs cover a number of specific goals and indicators related to education (e.g., Goals 1, 2 and 5: to eradicate poverty and hunger, people need to increase their economic potential via education; meeting all learners' needs in education fosters gender equality). Education is not only an integral part of sustainable development, but also a critical factor in promoting it. Goal 4 aims to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all”, and its specific targets are illustrated in. Since 1992, UNESCO has promoted ESD, which refers to the totality of actions taken by people to improve the sustainability competencies of learners. ESD is clearly stated as part of Target 4.7 of the SDG on education: “By 2030, ensure that all learners acquire knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development”, which will facilitate learning about all the SDGs. ESD shifts the focus from teaching to learning, underlining an action-oriented, transformative pedagogy with interdisciplinary as well as transdisciplinary formal and informal learning. ESD suggests pedagogical approaches and learning topics related to each of the 17 SDGs to achieve learning objectives comprising cognitive, social-emotional, and behavioral objectives and key competencies that will enable learners to realize the SDGs. The focus on

ESD has increased in the daily practices of schools. ESD in schools is transformative and learning-oriented, from learning to know, learning to be, learning to do and learning to live together, to learning to transform oneself and society. ESD can be effectively promoted by key actions, such as establishing the awareness, meaning and scope of ESD; reorienting curricula, teaching, and learning; capacity building; synergizing ESD with other "adjectival" educations; providing ESD resources and materials; and engaging in international and regional cooperation. Eight characteristics within schools lead to ESD effectiveness: sustainable leadership, resources, pluralistic communication, supportive relations, collective efficacy, adaptability, democratic decision making and a shared vision. Based on the above-mentioned features, key actions and characteristics, Figure 1 proposes a framework of ESD in schools.

It is difficult to specify the criteria to measure ESD or to define its success, but in order to ensure its effectiveness, research should not avoid exploring these essential questions. Although some studies have investigated the relationship between SDGs and education, senior high school students' understanding of the SDGs has not been clarified. Sustainability competencies—a critical target of ESD—encompass the overall cognitive abilities and skills as well as the motivational, volitional and social readiness required to address sustainability-related problems and to individually and collectively promote sustainable development. To understand the competencies of senior high school students, cognition, motivation, and social readiness concerning the SDGs should first be explored.

2.3. Awareness of the SDGs among Senior High School Students:

Insufficient in Knowledge, Yearning for Sustainability Education Goal 4, Quality Education, was ranked among the top concerns in the MY World 2030 survey a global citizen survey on the SDGs to investigate how people prioritized the SDGs. The results were broadly in line with the main findings of another global survey on the SDGs. During the investigation, responses from the private sector and political and public administration (3250 respondents) rated education and research organizations as the second "most relevant partners for achieving the SDGs". In addition, educational and research institutions are considered to be the most valuable driving forces for the achievement of the SDGs by establishing partnerships in accordance with SDG 17. The awareness and knowledge of the SDGs among senior high school students will be limited if education or intervention is lacking. While ESD is popularized and implemented all over the world, research on its effects and effectiveness is rare.

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The current study highlights the following issues that deserve policy action for the achievement of the 2030 Agenda for Sustainable Development. One such issue is raising awareness of the SDGs in higher education. This is a focal point as the schools and Universities disseminate knowledge and research inspiration to young people. As far as we know from the current literature there is a gap in raising awareness of the SDGs through a creative, practical, and appealing way among the University students. Another issue which deserves policy action is the incentivizing of such initiatives that finally proved to be effective. For that reason, it is important the assessment on how effectively such practical actions raised awareness of the SDGs among the University students. According to literature (Tchamyu, 2020), in addition to the investment in technologies which are high-end, the creation as well as the dissemination of knowledge are vital too via universities and institutes of research in a variety of disciplines and fields.

Methodology Research Approach

A quantitative research approach was adopted for the study.

Research Design

Pre-experimental research design (before after experiment without the use of control group), one of the forms of Quasi-experimental research design was used for this study.

Sampling Methodology

Universe of the Study- Universe of the study comprised of all the high school students studying in 10th grade in Government Senior Secondary School, Chhota Shimla, in the state Himachal Pradesh, aged between 14 to 17.

Unit of the Study - An individual high school student studying in 10th grade in Government Senior Secondary School, Chhota Shimla, in the state Himachal Pradesh aged between 14 to 17.

Sample Size

The sample size included 60 students studying in 10th grade, from Government

Senior Secondary School, Chhota Shimla, in the state Himachal Pradesh.

Method Used for Data Collection

Questionnaire method has been used to collect the data.

Tool Used for Data Collection

Quantitative data was collected using Sustainability Consciousness Questionnaire designed by Niklas M. Gericke, Jelle Boeve-de Pauw, Teresa Berglund, and Daniel Olsson, in their paper, "The Sustainability Consciousness Questionnaire: The theoretical development and empirical validation of an evaluation instrument for stakeholders working with sustainable development" as part of the project, "Evaluating effects and success factors related to ESD implementation in Swedish schools".

The pre intervention questionnaire also had descriptive questions regarding gender, age, domicile, employment sector of parents, factor that decided choice of school, field/area of interest, whether exposed previously to the concept of sustainable development, interest in learning about sustainable development. However, the same questions were avoided in the post intervention questionnaire, with emphasis given only to the 46 questions pertaining to sustainability consciousness.

Methods and Tools for Data Analysis

The data was analysed using both descriptive and inferential statistical methods. Frequency distribution and graphical representation of data was used as part of the descriptive statistics. Paired sample t-test, Independent sample t-test, and One Way Anova, were used as part of the inferential statistical methods. The analysis of the data has been done using Statistical Package for Social Sciences (SPSS).

Paired sample t-test was administered to find whether there was any statistically significant difference between the before and after scores of the awareness level of respondents on sustainable development. A multiple Line Graph has also been used to present the difference in scores, before and after the intervention.

Findings/Results

This chapter shows key findings pertaining to the various hypotheses of this research, based on the quantitative data collected. An attempt has been made to present the statistical data using clear text narrative, supported by tables, graphs and charts. This chapter deals with the results in such a manner so as to elaborate on the objectives of this paper, including testing the efficacy of the experimental ESD module, and the dependence of the students' sustainability consciousness based on various independent variables. Paired sample t-test was, one of the inferential statistical methods, was used to analyse the before and after awareness scores of the respondents.

Out of 60 respondents, 50% of them belonged to the age category of 15. Whereas 26.67% of them were 16, 20% were 14, and the remaining 3.33% were 17.

Out of the total 60 respondents, 50% of them chose the school in which they are studying due to reputation, 18.3% due to influence of friends, 15% due to no particular reason, 10% due to extracurricular activities, 3.3% due to proximity to home, and the remaining 3.3% due to low fee.

Out of the total 60 respondents, 45% of them are interested in Arts, 20% are keen towards sports and games, 16.7% are interested in science, 13.3% are interested in commerce, 3.3% are drawn towards co-curricular activities, and the rest 1.7% are interested in social sciences.

Out of the total 60 respondents, 55% have already heard of sustainable development and related concepts, whereas, 45% have never heard of the term before.

Out of the 55% who have heard of sustainable development before, 33.3% of them heard it in school, 11.7% of them heard it from the internet, 3.3% heard it on TV, 3.3% read it on the newspaper, 1.7% heard it from friends, and the rest 1.7% heard it in their homes.

Out of the total 60 respondents, 75% have never received or been a part of an orientation class or awareness session on sustainable development, whereas, 25% of the respondents have already attended.

When asked about their interest in learning about sustainable development, out of the total 60 respondents, 61.7% said 'yes', 31.7% responded 'maybe', and the rest 6.7% responded 'No'.

Out of the total 60 respondents, 68% were male, and the rest 31.7% were female.

Analysis of the effectiveness of the experimental ESD module

		Mean	N	Std. Deviation
Pair 1	Total Score Before Intervention	163.65	60	21.49
	Total Score After Intervention	186.25	60	23.49

Table: Mean Score of Before After Scores on Sustainability Consciousness of Respondents

		Mean	Std. Deviation	t	df	Sig. (2 -tailed)
Pair 1	Total Score Before	-22.60	20.32048	-8.615	59	.000
	Intervention - Total Score After Intervention					

Table: Paired Samples T-Test to Find the Difference in Sustainability Consciousness Before and After Receiving Intervention

Paired sample t-test was administered to find whether there was any statistically significant difference between the before and after scores of the awareness level of respondents on sustainable development.

The above tables indicates, that there is a difference in the before and after scores signifying the sustainability consciousness of students who received the intervention through the experimental ESD module. The mean score of students, indicating sustainability consciousness before the intervention is 163.65 (SD = 21.49), whereas, the mean score of students, indicating sustainability consciousness after receiving the intervention is 186.25 (SD = 23.49).

However, when we consider the p value, which is 0.000 (less than 0.05), we fail to reject the null hypothesis. Therefore, it is established, that there exists a statistically significant difference in awareness level of school students before and after receiving intervention, via the experimental ESD module.

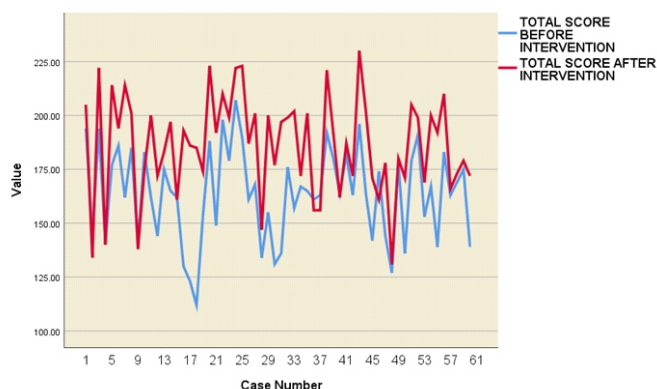


Figure: Multiple Line Graph Representing Change in Sustainability Consciousness Before and After Receiving Intervention

A multiple Line Graph has also been used to present the difference in scores, before and after the intervention.

Discussions and Recommendations.

Summary of Findings

The objective of this paper was to understand the level of sustainability consciousness among high school students and to introduce and test the potency of an experimental Education for Sustainable Development module. The results indicate, that majority of children aged between 14 to 17, have never been acquainted with the concept of sustainable development or even a life guided by the principle of sustainability. However, their sustainability consciousness showed a significant improvement with the exposure to the experimental education for sustainable development module, with many of them showing keen interest in knowing more. The mean of before scores indicate that the awareness level of students was 163.65 (SD = 21.49) which increased to 186.25 (SD = 23.49), after the intervention. The difference is also statistically significant as the p value turned out to be less than 0.05 (0.00), therefore, the effectiveness of the designed module is empirically significant.

Interpretation of the Results

Even though UNESCO's education sector response called Education for Sustainable Development presents itself as one of the most essential prerequisites for achieving a sustainable community, one cannot unfortunately see it being implemented in Indian schools, or any academic institution as a matter of fact.

The data collected shows, that the students ranging from 14 to 17 years, the foundational age to know and understand concepts related to sustainability, have very little to no knowledge about the same. Forty five percent of the respondents have never heard about the concept itself. This has far and wide-reaching implications for the growth and development of not just our country, but for the wellbeing of the world in general. If students grow up to be professionals in whichever sector they chose to be, without having the necessary sustainability consciousness, or even the key values and competencies to be sustainability torch bearers, the dark realities we are faced with today such as climate crisis, natural resource crunch and so on, will only aggravate and worsen in the future.

Of the students who have heard of sustainable development before, majority of them have heard it in school, with the rest relying on platforms such as newspapers, television or even the internet. This is a positive thing, as there is hope in the potential of academic institutions such as schools to bring out fundamental and compulsory changes in the minds of young individuals, to develop them into adults thriving and living on the principles of sustainability. One cannot digress from the fact that what a child learns in school, is supremely responsible them to take shape in their later life educational systems are the zenith of learning. Therefore, even if out of 60 respondents, only 33.3% have heard about sustainable development in school, it is still a step forward towards the realization of achieving a sustainable community.

However, how and by what means was sustainable development introduced to these students is another important question to be addressed. Out of the total respondents, 75% have never been a part of orientation classes, or awareness sessions on sustainable development. Which is another concerning factor, as it signifies that much importance is not being given in schools regarding the inculcation of values, skills, or knowledge related to sustainable development so much so that there was not even a single awareness session, special class, or orientation on the topic. This again draws our attention to the need for time, or even days being devoted for the same purpose. This is further found absolutely necessary, as out of the total respondents, 61.7% of them were keen on knowing about not only the concept, but the nitty-gritties of it, with 31.7% partly interested, and only 6.7% of them unsure of the entire ordeal. However, that is also something to be considered as positive, as student participation is what is foundational to the delivery of something so monumental as Education for Sustainable Development.

One very interesting aspect discovered on data analysis, even though not statistically significant, was the difference in awareness level of students on sustainable development, based on variables such as gender, domicile, and employment sector of parents. When the scores of boys and girls were compared, it did not show a wide gap. However, when compared based on their domiciles, students belonging to the urban domicile showed more awareness level as compared to students belonging to the rural domicile. This could be attributed to the exposure they get or the varied level of interactions they have with different members in the urban community, which is recognized for its multiculturalism, and better quality of life. However, when the employment sector of parents is concerned, it is surprising to find that students having parents working in the government sector had the highest level of awareness, followed by daily wages, private and agricultural sector. Perhaps, it is again due to the home environment, which leads children to imbibe certain kind of sustainable values, based on the kind of jobs their parents are involved in. However, this is just an assumption, the causality of which needs to be established in detail with further research.

On analysis of the before and after scores representing the awareness level of the students on sustainable development, it is evident, that the ESD module being tested turned out to be not just effective, but a highly necessitating factor is initiating a topic for conversation between students on the topic. The statistical significance in difference between the two scores, is an additional factor to think about more such interventions, guided by the principles of what UNESCO proposes as Education for Sustainable Development, as well as direct our attention towards sustainability as a purpose for education. Research results show that secondary education should be transformed by ESD pedagogies more than mere sustainability content. Pedagogies associated with ESD stimulate students to ask questions, analyse, think critically, and make good decisions. Such pedagogies move from teacher-centred to student-centred lessons and from rote memorization to participatory learning.

This question pertains to educating today's students for an uncertain future and to face the complexity of future challenges to global sustainability. ESD provides students with opportunities to identify relevant issues and work through the process of finding appropriate solutions. It is feasible to implement strategies that help students to observe the complex connections between local and global issues, appreciate entire systems and question and engage in focused inquiry. The more practice students have in facing today's real-world issues, the more likely they will be able to address the problems they face in the future.

Recommendations

1. Integrate ESD across the primary and secondary curriculum: It is important to fully integrate ESD in curricula across all subjects and within a clear framework. The designed ESD module can indeed be used for future interventions across different schools in the country, or can be used

- as a guideline, provided, it is made culturally appropriate.
- To encourage learners to become change agents who have the knowledge, means, willingness and courage to take transformative action for sustainable development, learning institutions need, themselves, to be transformed. The entire learning institution needs to be aligned with sustainable development principles, so that learning content and its pedagogies are reinforced by the way facilities are managed and how decisions are made within the institution.
 - Provide professional development for teachers to ensure ESD policy implementation: Student learning suffers if teachers fail to understand ESD. ESD involves knowledge in several disciplines, often beyond teachers' areas of specialization. Some teachers may reduce ESD to recycling and green projects and may not emphasize sustainability in broader contexts. Others understand its complexity and the need for systems thinking, but they view ESD as an overwhelming challenge and responsibility. However, others do not understand it as important to their courses. These challenges underscore the difficulty in changing teachers' values and behaviours. Thus, there is a need for a coherent system of professional development aligned with teacher education programmes.
 - School leaders should adopt ESD management practices to complement and support ESD in the curriculum: With teacher education and training opportunities in place, there is also a need for strong educational leadership of principals and teachers, including high expectations towards teachers and management support. School administrators also need to adopt new management practices and structures, such as different time schedules in schools.
 - Active cooperation between learning institutions and the community should be promoted to ensure the latest knowledge and practices for sustainable development are utilized to advance the local agenda. It is also in the local community where people find partners for their sustainability efforts.
 - It is today's youth and following generations who will be left to face the consequences of unsustainable development. It is their present and future that are at stake. In return, it is young people who are becoming increasingly vocal and active, demanding urgent and decisive change, and holding world leaders accountable, in particular to address the climate crisis. Empowering and mobilizing young people of all genders, therefore, is a central part of ESD implementation.
 - Policy-makers have a special responsibility in bringing about the massive global transformation needed to engender sustainable development today. They are instrumental in creating the enabling environment for the successful scaling up of ESD in education institutions, communities, and other settings where learning takes place. Policy support is equally important for the formal, non-formal and informal sectors, as well as for the creation of synergies between the sectors.

Implications of the Study

The research findings could have possible implications for policy, practice, theory, education, and even further research. A deeper analysis could be done in order to understand the effectiveness of Education for Sustainable Development on the grassroots level. The most underprivileged and vulnerable sections of the society are the ones being repeatedly impacted due to conventionally repeated unsustainable practices. Therefore, in order to study how sustainable development can be a huge respite to the world population, one needs to understand the intersectionality involved, and work across sectoral and disciplinary borders to get a holistic perspective on ground realities.

Policy Development

Sustainability requires the enforcement of wider responsibilities for the impacts of decisions. This requires changes in the legal and institutional frameworks that will enforce the common interest. Some necessary changes in the legal framework start from the proposition that an environment adequate for health and well-being is essential for all human beings including future generations. Such a view places the right to use public and private resources in its proper social context and provides a goal for more specific measures. Policies can be developed with an aim to scale up actions at all levels of the school organization when implementing ESD in educational practices. The underlying idea is that ESD should empower young people by equipping them with action competence for SD, and thus in the long run, to contribute to transforming the society into being environmentally, socially, and economically sustainable. The common theme throughout this strategy for sustainable development is the need to integrate economic and ecological considerations in decision making. They are, after all, integrated in the workings of the real world. This will require a change in attitudes and objectives and in institutional arrangements at every level.

Social Work Practice

The law alone cannot enforce the common interest. It principally needs community knowledge and support, which entails greater public participation in the decisions that affect the environment. This is best secured by Social Work practitioners, with them promoting citizens' initiatives, empowering people's organizations, and strengthening local democracy, through various social work methods. There is also high scope and requirement for social workers to be employed in schools, who can act as facilitators for the delivery of ESD. Methods like Group Work, can be highly effective in the delivery and development of key competencies, values, skills, and knowledge pertaining to sustainable development.

Social workers working in any sector, can engage in the delivery of ESD, through a peek into the individual behaviours linked to activities, products and services, sustainable lifestyles, and the SDGs themselves, with the help of "Good Life Goals," which are a set of personal actions that people around the world can take to help support the Sustainable Development Goals (SDGs). They are lifestyle tasks for individuals that are carefully aligned with the SDGs' 169 targets and indicators.

Social Work Education

The findings of this study can lead to the development of theory that runs in alignment with the foundational principles of sustainable development, which can train social work trainees to design effective ESD modules, to be implemented in educational institutions.

Research

In spite of widespread implementation and success of ESD during the Decade, ministries of education require evidence that ESD contributes to quality primary and secondary education so that they can write and implement new policies that incorporate ESD. UNESCO has documented this need.

More research is needed to document that ESD is quality education. Much anecdotal evidence exists that ESD is related to academic gains as well as boosting people's capacities to support sustainable development. Research will provide a solid evidence base and firmly establish that ESD is quality education. (UNESCO, 2012c, p. 5)

The research reported here directly addresses this need.

Therefore, in order to study how ESD modules can be an efficient way to raise the sustainability consciousness of young individuals, one needs to broaden the sample size, as well as involve more schools, from different states, and other rural and urban settings to get a wider and clearer input into the realities of ESD in India. There has been an effort to engage in Quasi-experimental research, but, further research studies can engage in experimental research so as to manipulate the different variables to record varying data if any. A qualitative or even a mixed methodology can be adopted, especially Sequential Explanatory research, in order substantiate the quantitative research with a qualitative study.

Limitations of the Study

- Data could only be collected after non-probability sampling. This will prohibit generalisation of results and the equal chance of being represented. Another limitation was the collection of post intervention data, right after the implementation of the intervention.
- The intervention could only be facilitated as a half-day session, considering such an ESD module, on such a significant topic deserves a more time, preferably, a 3-day Social Group Work session.
- The research was quasi-experimental in nature, nevertheless, there is a possibility for a pure experimental research, in order to establish various causalities between different variables in a purely scientific manner.
- The study could only be facilitated in one school, whereas, it could be replicated in various schools, in different states of the country, to understand the sustainability consciousness of students as well as the efficacy of the ESD module, across cultural borders.

Conclusion

Given the aim of this paper, the establishment of the importance of ESD in Indian schools, has been a success factor. The quantitative approach using the Sustainability Consciousness Questionnaire has led to more solid evidence into the inner realities of high school students in the concerned school. The results of this research provide abundant quantitative evidence that ESD contributes in many ways to a quality education. When the curriculum includes sustainability content—delivered in terms of local, social, economic, and environmental contexts—teaching and learning transforms primary and secondary education in all contexts. Research also provides evidence that ESD pedagogies facilitate the learning of knowledge, and promote the learning of skills, perspectives, and values necessary to foster and maintain sustainable societies. Nevertheless, due to a lack of nationwide samples, the results are not generalizable, which leads us to the need for further research, with various social factors coming under its ambit. The author recognizes the need for more research which clearly demonstrates the contributions to quality education and the extent of those contributions, in a more quantitative, as well as qualitative sense.

A comprehensive policy analysis and a detailed field-based study with the incorporation of educationists, policy analysts, and administrators can potentially solve the minor and major hiccups that the education sector is facing with regards to lapses in implementation of a much-needed ESD in India.

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